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SHAPING THE FUTURE OF MASSACHUSETTS HIGHER EDUCATION:

Demographic Change and Enrollment Prospects

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A Report Prepared for the Board of Regents

October 1983

TABLE OF CONTENTS

	Introduction	1
1.	Defining the Issue	2
2.	Debate Over Future Enrollments	9
3.	Previous Enrollment Projection Reports	11
4.	Future Enrollment: Some Examples	19
5.	Enrollment Patterns	30
6.	Implications for Higher Education	36
	Recommendations	38
	Concluding Thoughts	40
	References	42

CHARTS

I - Number of 18 Year Olds in the U.S., 1950-2000 3

II - Live Births in Massachusetts, 1900-1976 4

III - Massachusetts Live Births and Actual and Projected High School Seniors 6

IV - WICHE Projections for U.S. and Regions 7

V - WICHE Projections for Selected States 8

VI - Projected State Population Changes, 1980-2000 20

VII - Example # 1 23

VIII - Example # 2 24

IX - Example # 3 26

X - Example # 4 26

TABLES

1 - Massachusetts Resident Births, 1910-1982 2

2 - College-Age Population Trends, 1950-2000 5

3 - Potential Offsets to Enrollment Declines 10

4 - Board of Higher Education Projections (1969) 12

5 - OSTI Projections (1973-74) 13

6 - Board of Higher Education Projections (1975) 13

7 - BHE Public-Sector Projections 14

8 - Postsecondary Education Commission Projections (1979) 15

9 - Comparison of Projections 17

10 - Massachusetts Population by Age Group 19

11 - Public Enrollment Age Distribution, 1982 22

12 - Community College Examples 27

13 - State College Examples 28

14 - University Examples 29

15 - Enrollment Patterns, 1970-1981 31

16 - Enrollment Pattern, 1982 32

Introduction

In the middle years of the 1960's the American birth rate began to decline after a period of unprecedented growth. Just as the earlier "baby boom" fueled an enormous expansion of higher education, many commentators now believe that the "birth-dearth" generation will force a wrenching contraction in college and university enrollments, a contraction that may lead to the closing of many institutions. Others disagree, arguing that if a larger number of young adults go to college and if older adults, particularly in the large pool of 25-44 year olds, are enrolled, the decline will be modest or enrollments may even increase!

This uncertainty, which has created a widespread sense of foreboding in higher education, is inevitable. We cannot predict exactly how many students Massachusetts higher education will enroll in future years, who they will be, what they will want from their schools, or how they will distribute themselves among public and independent colleges and universities. Uncertain prospects, however, make it all the more important that higher education leaders consider contingencies, and formulate strong yet flexible policies anticipating as well as responding to demographic change.

This paper does not offer delusive projections of enrollment trends, but it does present several alternative examples illuminating the issues arising from changes in the structure of our population. It surveys the many variables that affect enrollment patterns. Finally, it presents for discussion some recommendations concerning the role of the Board of Regents and the role of our colleges and universities in the face of these new conditions.

Among the serious implications for our higher education system, the most challenging involve distribution of our scarce resources in a changing, perhaps shrinking, "marketplace." The quality of academic programs will be threatened by financial constraints and pressure to keep up enrollments. Further modification of our existing budgeting formula is required to meet these problems. The responsibilities of the Board and of institutional leaders in areas such as program development and enrollment planning must be reconsidered and redelineated. The Regents' relationship with independent higher education will be an essential part of any attempt to address these issues.

Over the next 15 years, the Regents will have to make a series of policy decisions that will affect the nature and even the survival of our colleges and universities. It is vital that they understand, at the outset, the dimensions of the situation, its implications, and its uncertainties.

1. DEFINING THE ISSUE

Amidst the uncertainties and disagreements about future enrollments, there is one certainty. The 18 year old population is declining. We know precisely the demographic boundaries of this decline. The pool of high school graduates reached its peak in 1979 and is expected to reach its lowest point in 1994. During those fifteen years the 18 year old population nationally will drop from 4.3 million to 3.2 million, a decline of 26 percent. For Massachusetts, the figures are even more sobering. The Commonwealth is second only to Rhode Island among the states expected to experience the most percipitous decline, with 43% fewer 18 year olds in 1994 than in 1979.

Table 1 and Charts I and II demonstrate the dimensions of the demographic issue in Massachusetts. For our purposes, we need to note the year 1961, which had the greatest number of births of any single year. Thereafter birth rates began to tumble, reaching their lowest point in 1976. Eighteen years later comes the low ebb of 18 year olds--1994. In short, the Commonwealth, like many other states across the nation, has a fifteen year "window of vulnerability" from 1979 through 1994.[1]

TABLE 1.

MASSACHUSETTS RESIDENT BIRTHS

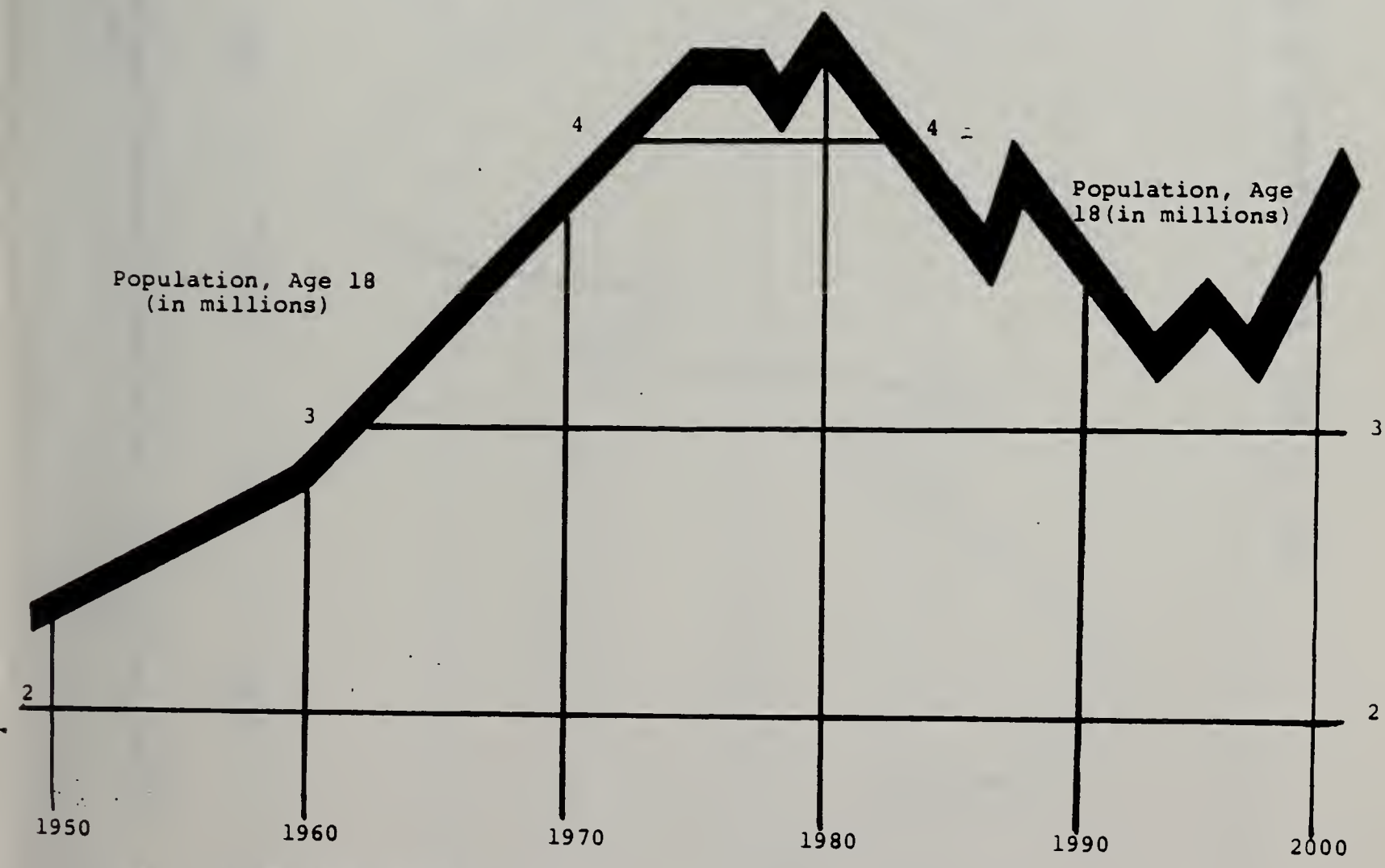
Year	Births	Year	Births
1910	86,539	1970	93,582
1920	91,859	1971	86,755
1930	73,690	1972	76,835
1940	65,369	1973	72,237
1950	95,619	1974	70,071
		1975	68,070
1960	114,018	1976	65,947
1961	116,794	1977	67,838
1962	114,042	1978	68,526
1963	113,122	1979	70,568
1964	110,188		
1965	102,552	1980	72,591
1966	99,665	1981	73,931
1967	97,324	1982	75,749
1968	94,048	1983	
1969	95,098	1984	

Source: Commonwealth of Massachusetts, Secretary of the Commonwealth, Annual Report on the Vital Statistics of Massachusetts

Thereafter the nation as a whole experiences an "echo" baby boom which will produce a new mini-bulge of 18 year olds after 1994 and once again place demands on our higher educational system. The echo baby boom is much less dramatic in Massachusetts than it is nationally. Chart I presents college age population trends nationally. While it is significant that the number of 18 year olds reaches its lowest point in 1994, it is equally significant that a record-breaking number of teenagers will reach 18 years of age just four years later. Massachusetts is not so fortunate. If live births are an accurate barometer of college age students eighteen years later, the increase here will be considerably more modest (see Table 1). Nevertheless, the Commonwealth's continuing ability to attract a significant number of out of state students may also allow us to benefit appreciably from the echo baby boom.

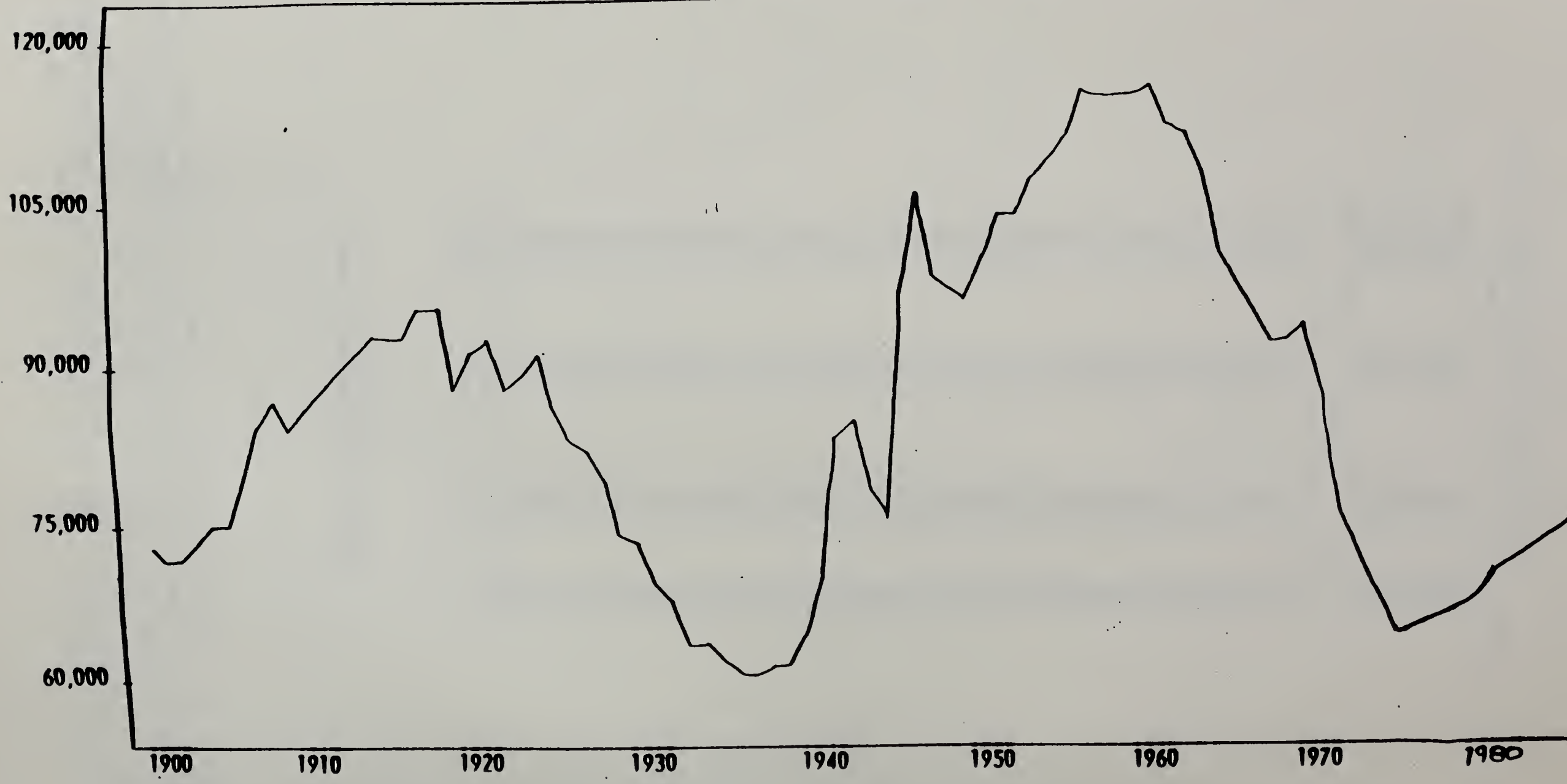
CHART I

NUMBER OF 18 YEAR OLDS IN THE UNITED STATES 1950-2000



Source: Change Magazine, March 1983

CHART II: **LIVE BIRTHS IN MASSACHUSETTS, 1900 TO 1976**



Source: Adapted from Geraldine Mercandante. *Enrollment Projections for Public Schools in Massachusetts, 1975-79.* Massachusetts Department of Education, 1975).

One other aspect of the decline in the number of 18 year olds requires emphasis. As we have noted, the decline begins in 1980. In the early years of the 1980's, however, the decline is gradual and even fluctuates. Between 1986 and 1989 the number of 18 year olds nationally will slightly increase. Thereafter the decline is fairly dramatic through 1994 (see Table 2).

TABLE 2.

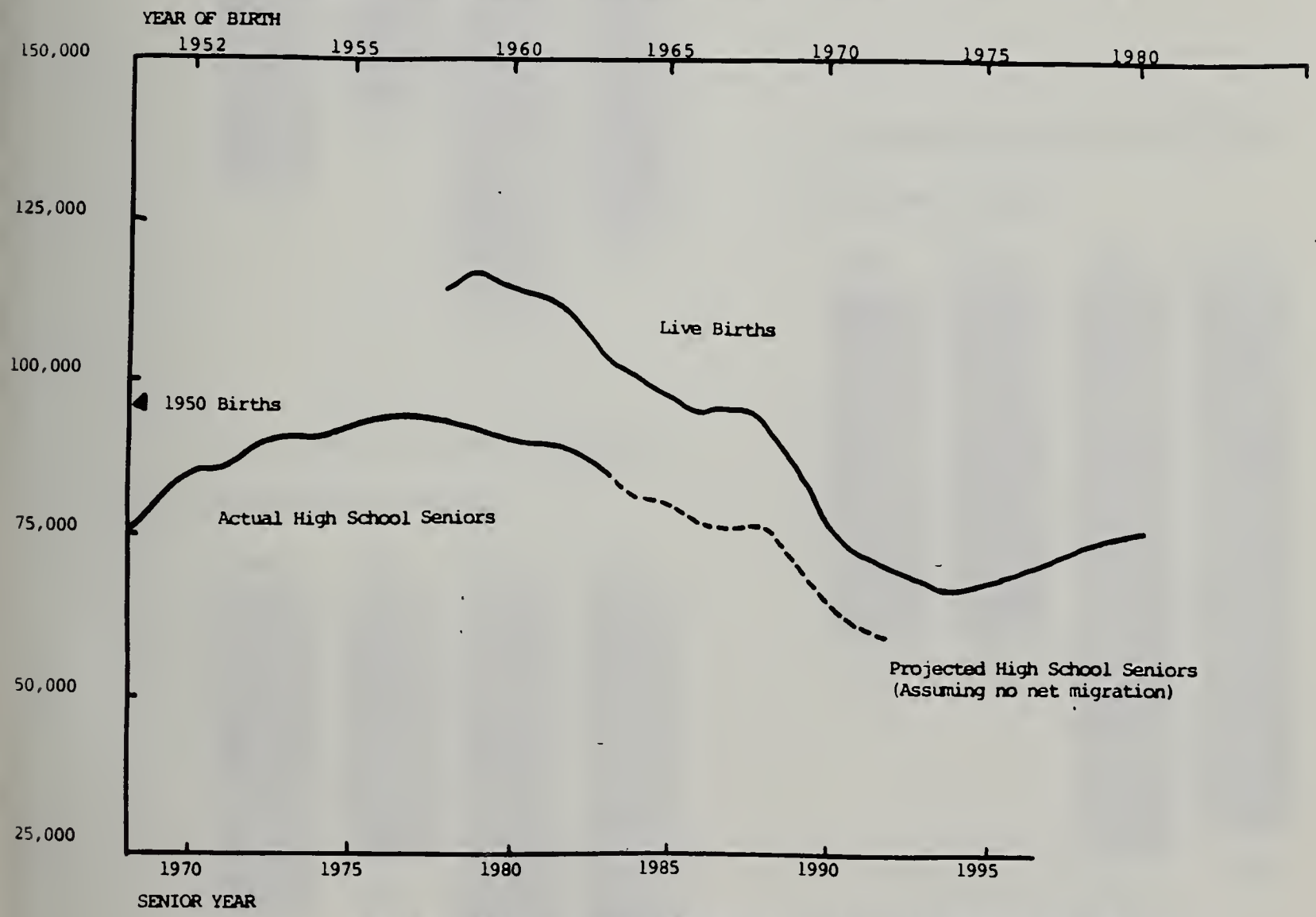
College-Age Population Trends
1950-2000

Year	18 Year Olds	18-21 Year Olds	18-24 Year Olds
1950	2.164	8.946	16.075
1951	2.085	8.741	15.781
1952	2.058	8.514	15.472
1953	2.160	8.416	15.257
1954	2.135	8.384	15.103
1955	2.142	8.443	14.968
1956	2.244	8.636	14.980
1957	2.274	8.746	15.094
1958	2.307	8.909	15.308
1959	2.431	9.190	15.404
1960	2.613	9.556	16.128
1961	2.976	10.290	17.004
1962	2.816	10.813	17.688
1963	2.786	11.171	18.268
1964	2.763	11.230	18.783
1965	3.804	12.203	20.293
1966	3.536	12.944	21.376
1967	3.545	13.738	22.327
1968	3.539	14.528	22.883
1969	3.676	14.425	23.723
1970	3.780	14.707	24.687
1971	3.875	15.019	25.779
1972	3.970	15.438	25.913
1973	4.045	15.795	26.397
1974	4.093	16.109	26.916
1975	4.243	16.483	27.605
1976	4.251	16.767	28.163
1977	4.244	16.970	28.624
1978	4.229	17.106	28.980
1979	4.292	17.156	29.299
1980	4.211	17.117	29.462
1981	4.145	17.018	29.512
1982	4.087	16.874	29.357
1983	3.917	16.499	29.022
1984	3.703	15.988	28.480
1985	3.604	15.442	27.853
1986	3.521	14.873	27.084
1987	3.567	14.520	26.446
1988	3.653	14.470	25.967
1989	3.733	14.600	25.629
1990	3.426	14.506	25.148
1991	3.240	14.179	24.687
1992	3.168	13.685	24.240
1993	3.247	13.198	23.957
1994	3.199	12.971	23.594
	Series I		
1995	3.515	13.248	23.475
1996	3.806	13.886	23.565
1997	4.071	14 719	24.224
1998	4.302	15.825	25.288
1999	4.506	16.821	26.620
2000	4.672	17.692	28.029

Source: U.S. Bureau of the Census.
Population Characteristics, 1979.

The figures in Massachusetts show a similar fluctuation followed by decline (see Chart III). There will be a precipitous drop in the number of Massachusetts high school seniors after 1988.

CHART III: MASSACHUSETTS LIVE BIRTHS AND ACTUAL AND PROJECTED HIGH SCHOOL SENIORS



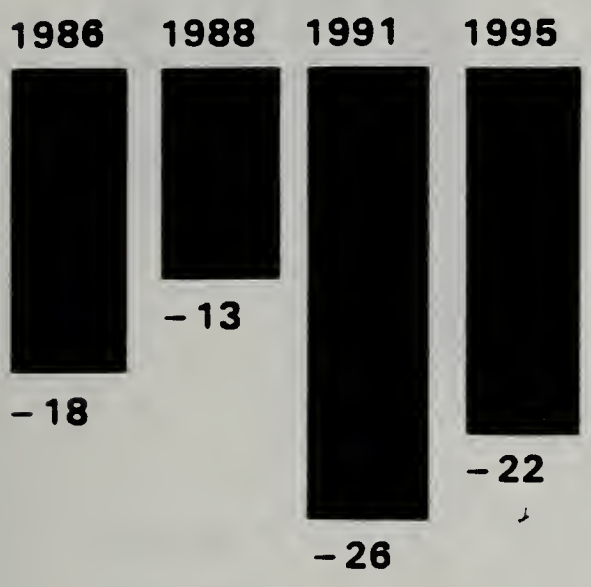
SOURCE: Live Births - Annual Report on the Vital Statistics of Massachusetts
High School Seniors - Stephen P. Coelen, Massachusetts Development Research Institute, University of Massachusetts, Amherst, Mass.

This pattern is even stronger in the much-publicized projections of the Western Interstate Commission for Higher Education (WICHE), published in 1979.[2] WICHE's projection of high school graduates through 1995 estimated migration patterns among the 50 states. The study projected the greatest decline in the Northeast Region, with considerable variation among other parts of the country (see Chart IV). WICHE's figures illustrate the importance of the years between 1989 and 1994 when much of the decline in high school graduates is anticipated. In Massachusetts, WICHE expects most of the decline to occur in that period--23% in just six years (see Chart V). The WICHE projection receives further confirmation from a very recent study at the University of Massachusetts Amherst. Like WICHE, the Amherst study projects a dramatic decline beginning in 1989.

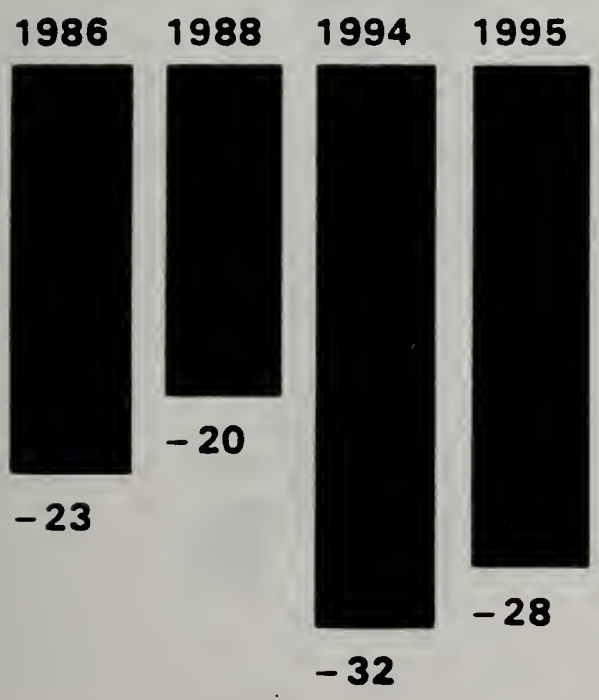
CHART IV: WICHE PROJECTIONS FOR UNITED STATES & REGIONS

Percentage of change in the number of 18-year-olds calculated on the base year of 1979. Projections by the Western Interstate Commission for Higher Education.

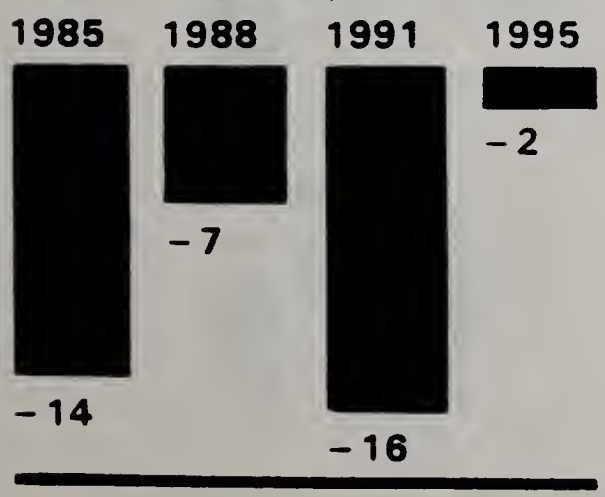
United States



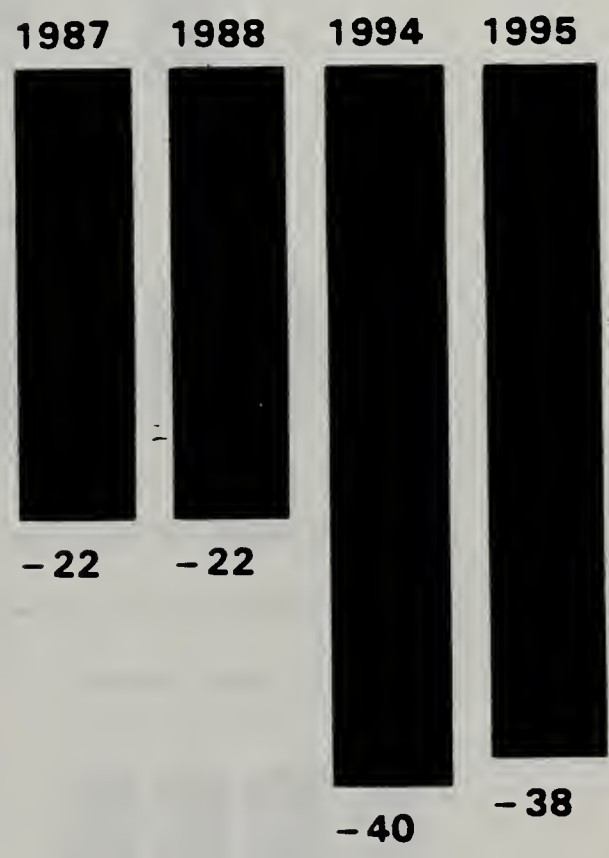
Northcentral Region



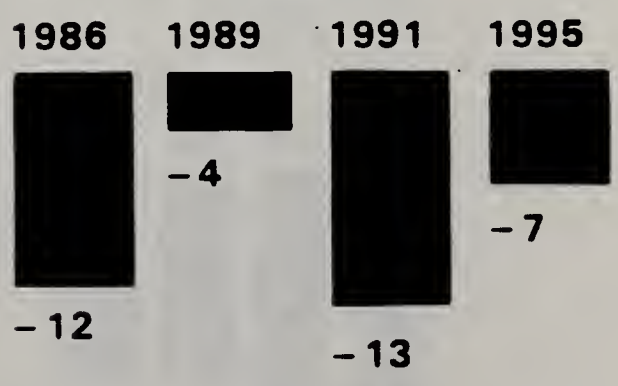
Western Region



Northeast Region

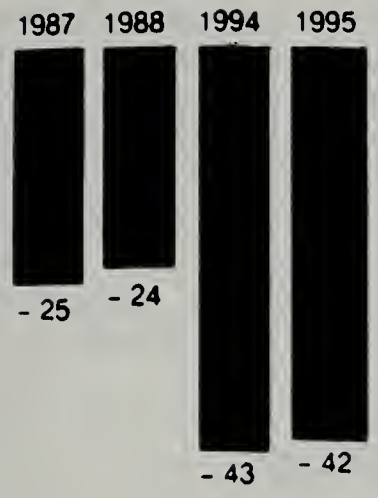


Southeast and Southcentral Region

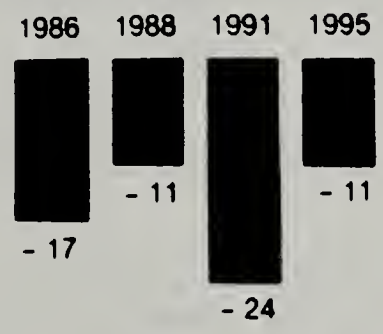


Selected State Statistics

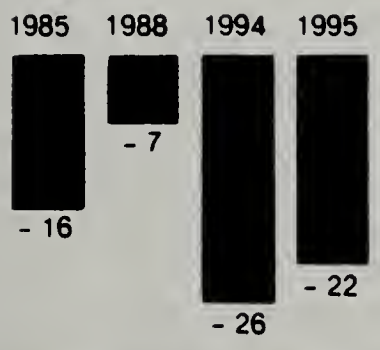
New York



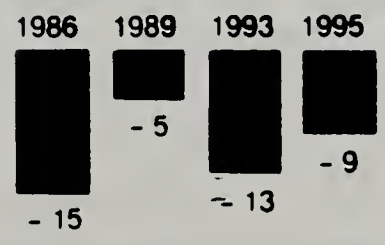
California



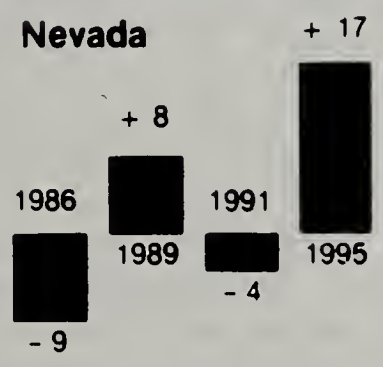
Virginia



Florida

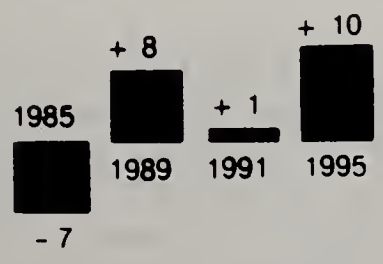


Nevada

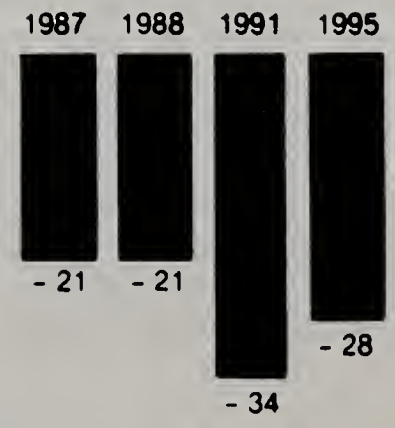


Massachusetts

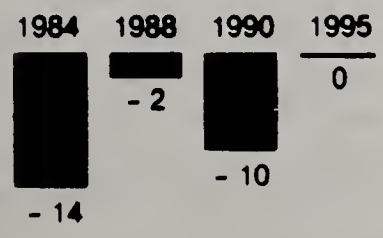
Texas



Wisconsin



Colorado



In summary, we have one solid piece of evidence in looking ahead to the future enrollments of Massachusetts College and Universities. That evidence is the future age distribution of the population and, in particular, the number of 18 year olds. In Massachusetts that number is presently in decline, and it will decline precipitously between 1989 and 1994. Thereafter Massachusetts will experience a modest increase in the number of 18 year olds, an increase much less dramatic than in the nation as a whole.

2. DEBATE OVER FUTURE ENROLLMENTS

The number of 18 year olds is not the sole determinent of college and university enrollment. Groups traditionally less well-represented in higher education (women, minorities, adults over 24 years of age) are attending in greater numbers. In fact, the number of minority 18 year olds will continue to increase during the "birth dearth" period--an important point many commentators ignore. The future participation patterns of these populations are especially hard to predict; Analysts disagree on whether present trends will continue, or how they will change. For our purposes, we can capture both the flavor and nature of the disagreements by focusing on three frequently cited commentators on "the coming enrollment crisis."

Perhaps the best known of these commentators is David W. Breneman, formerly Senior Fellow at the Brookings Institution and now President of Kalamazoo College. In a report published for the Association of Governing Boards[3], Breneman argues that the majority of colleges and universities will experience "manageable declines" of roughly 10 to 15 percent. A smaller group of institutions will suffer much greater enrollment losses while a few institutions will continue to attract more qualified students than they can enroll. He believes that non-selective independent liberal arts colleges and public state colleges will be especially vulnerable to the enrollment decline while state university systems, particularly the flagship campuses, and selective independent colleges will do well.

Breneman is pessimistic about higher education's ability to offset the 18 year old decline by attracting other age groups. The one exception is public community colleges, which are in the best position to serve an adult part-time population. Especially worrisome to Breneman is that while high school graduation rates have remained essentially unchanged since 1965, Black and Hispanic students, whose high school completion rates are much lower, now make up a growing percentage of high school students. Thus high school graduation rates may fall, further exacerbating the enrollment decline. He cautions that <u>all</u> colleges and universities will face difficult choices in the next decade, choices that will require "hard thinking, sound planning and dedicated effort."

TABLE 3.

FRAMEWORK FOR ASSESSING THE POTENTIAL OFFSETS TO PROJECTED ENROLLMENT DECLINES IN THE COLLEGE-AGE POPULATIONS 1980 TO 1990

Alternative Strategies	Changed Condition 1980-1990	Possible Offsets: Calculated Increase in Enrollment Head Count	Calculated Full-Time Equivalent (Percent)	Calculated Increase in Enrollment (FTE)
1. Increased participation of women 20-34	Increase women's college-going rates to level of men's	1,230,000	56	689,000
2. Increased enrollment of adults 25 and over	Increase enrollment at existing adult college-going rates because of adult population growth	629,000	56	352,000
	Increase college-going rates for adults by 1 percentage point, from 7.7 to 8.7 (25-34) and 1.4 to 2.4 (35 and over)	230,000	56	129,000 481,000
3. Increased enrollment of young people from lower and middle income families	Increase college-going rate at each $5,000 income level to the rate at the next higher income level			
Lower income (less than $10,000)		237,000	73	173,000
Middle income ($10,000-24,000)		329,000	73	240,000
Higher income ($25,000 and over)		0		413,000
4. Increased college-going rate of the 18-24 age group	Increase the college rate 2 percentage points from 25.3 percent to 27.3 percent	503,000	73	367,000
5. Increased retention rates	Cut attrition between years 1-2 and 3-4 by a quarter	161,000	73	118,000
	Attract one quarter of those who complete two-year programs into four-year programs	146,000	73	107,000 225,000
6. Increased enrollment of foreign students	Increase at a lower rate than 1950-78	280,000	73	204,000
7. Increased participation of men 35-64	Increase men's college-going rates to level of women's	314,000	56	176,000
8. Increased enrollment of employed people currently being served by industry	Increase market share by 2 percent	800,000	17	136,000
9. Increased enrollment of graduate students	Increase, but a slower rate than 1970-77			
Public Institutions		110,000	56	62,000
Private Institutions		68,000	56	38,000 100,000
10. Increased enrollment of minority youth	Increase minority high school graduation rates from 69.8 percent to 80.0 percent from 1980 to 1990	102,000	73	74,000
11. Increased high school graduation rates	Increase high school graduation rate from 75 percent to 90 percent	83,000	73	61,000
12. Increased credentialling by test	Increase credentialling rate from 7.6 percent to 9.6 percent of high school dropouts	22,000	56	12,000

Source: Change Magazine (July/August 1980)pp. 42-43.

A report for the prestigious American Council on Education offers a much more optimistic view of the future[4]. Written by Carol Frances, Chief Economist for the Association, the report argues that instead of accepting the inevitability of enrollment contraction, colleges and universities should identify and carefully assess strategies to offset enrollment declines. The report then offers twelve strategies for relieving the potential decline in traditional college age students (see Table 3). These strategies include increasing high school graduation rates; increasing the enrollment of low-income and minority students; and increasing the enrollment of adults. If just three of the national strategies are successful, Ms. Frances argues, total college enrollment could increase 3.5 percent.

While Ms. Frances has carefully qualified her predictions by noting that very few institutions are likely to benefit from all or even most of her strategies, critics have found her optimism unwarranted. Fred Crossland of the Ford Foundation believes the ACE report "presents hopes rather than predictions" and predicts a national enrollment decline of about 15 percent[5]. Crossland has focused his own research on 13 states, including Massachusetts, where expected enrollment declines are roughly twice the national average. The steep declines in enrollment anticipated for these states can only partially be offset by vigorous recruitment of other groups of potential students. Given this reality, Crossland maintains that planning in the Northeast "must be predicated on the need to reduce 'production' not the wispy hope to increase 'consumption'."

In summary, there is a sharp debate over how to manage an imprecise academic future. Some believe it is folly not to anticipate contraction and suggest that planners must look for sensible and rational means to "decrease institutional supply." Others, notably Ms. Frances, argue that if we manage for decline that is exactly what we will get. She places her emphasis on employing strategies that will increase demand for higher education and thus buffer the drop in traditional college age students.

3. PREVIOUS ENROLLMENT PROJECTION REPORTS

There have been several attempts to project future enrollments for public higher education in Massachusetts. Major studies were conducted by the Board of Higher Education in 1969 and again in 1975; by the Organization for Social and Technical Innovation in 1973-74; and by the Postsecondary Education Commission in 1979.

We are now in a position to judge the accuracy of those projections, by comparing their predictions to the actual enrollments of subsequent years. In doing so, we find that each study had particular strengths and weaknesses, depending upon its level of analysis, its methodology, and its underlying assumptions. This record provides valuable lessons to guide us in new enrollment projection undertakings.

1. Board of Higher Education, Higher Education Enrollment Study for Massachusetts: A Comparison of Institutional Estimates and Projected Enrollment Trends for 1969-1975-1980 (1969).

This report presented two types of estimates: "institutional expectations," self-reported enrollment predictions from each higher education institution, and "enrollment projections" made by use of regression analysis (i.e., extrapolation of past trends to predict future behavior). Through manipulations of the variables, several different enrollment projections were produced, of which the most sophisticated is as follows:

TABLE 4

Year	Institutional Expectations	Enrollment Projections	Actual
1969	267,000	287,000	259,366
1975	351,000	411,000	384,485
1980	411,000	524,000	416,737

The vastly inflated enrollment projections (actual enrollments in 1980 were 107,000 less than predicted) can be traced to the assumption that there would be a continuation of the high growth rate of 1960-67. In fact, growth did not continue at the same pace into the 1970's.

2. Organization for Social and Technical Innovation, A Master Planning Process for Higher Education in Massachusetts: Report to the Board of Higher Education (1973, revised 1974).

The Organization for Social and Technical Innovation (OSTI) revised the earlier BHE projections of enrollment demand (1969), using newer demographic data, "more nearly complete" enrollment information, and a different estimating equation.

In its 1979 report, the Massachusetts Postsecondary Education Commission identified a number of problems with the data and statistical methodology used by OSTI. As Table 5 indicates, this study failed even to predict the direction of the enrollment change between 1975 and 1980.

TABLE 5

Year	OSTI (1973)	OSTI (1974)	Actual
1975	328,929	371,800	384,485
1980	325,616	368,209	416,737

3. Board of Higher Education. Enrollment Projections for the Commonwealth of Massachusetts through 1990 (1975).

Like the 1973 OSTI study, the BHE used a population ratio methodology. It assumed that all factors except population size and age distribution--participation rates, migration patterns, financial aid policies, etc.--would remain constant over the ensuing 15 years. The BHE made projections for each year through 1989-90. Its report concluded that the Commonwealth

> "will continue to experience enrollment growth in both the public and private sectors through 1982-83. Enrollment will then decline in the public and private sectors through 1989-90, at which time the projected enrollments will still exceed the 1974-75 levels."

Table 6 is a comparison of all types of students (full-time, part-time, undergraduate, graduate and unclassifed) in all segments for 1974-75, 1982-83, and 1989-90. It presents only selected figures from this extensive report.

TABLE 6

ENROLLMENTS, PROJECTED AND ACTUAL

PUBLIC

	2 Year	4 Year	University	Subtotal
1982-83				
Projected	53,511	70,024	52,262	175,797
Actual	75,648	44,631	60,758	181,037
1989-90				
Projected	52,648	68,905	48,724	170,277

PRIVATE

	2 Year	4 Year	University	Subtotal
1982-83				
Projected	22,214	77,918	152,695	252,827
Actual	23,028	82,872	126,633	232,533
1989-90				
Projected	21,118	73,152	146,578	240,848

The BHE's projection of total enrollment for 1982-83 (428,624) was only 4% above the actual level (413,570). Segmental disparities, however, ranged from a 57% overestimate for state colleges (due in part to the closing of Boston State College) to a 29% underestimate for community colleges.

As Table 7 indicates, the BHE ratios overestimated overall public sector undergraduate enrollments by 10%. However, the ratios worked extremely well for full- and part-time 2-year enrollments and for full-time university enrollments.

TABLE 7

Actual and Projected Undergraduate (Full and Part Time) Enrollments in Public Higher Education, 1982-83*

	2 Year	4 Year	Univ.	Total
F-T Undergrads.				
Projected	28,930	37,536	38,359	104,825
Actual	28,206	25,797	38,689	92,692
P-T Undergrads.				
Projected	20,744	7,554	3,978	32,276
Actual	19,854	4,568	8,076	32,498
Total Undergrads.				
Projected	49,674	45,090	42,337	137,101
Actual	48,060	30,365	46,765	125,190

* Figures do not include unclassified students.

Because the "full-time pool" (12th grade enrollments) was in decline and the "part-time pool" (25-34 year olds) was expected to increase, the BHE improved its results by treating full- and part-time enrollments separately. But the accuracy of this study was impaired by the rigidity of certain other assumptions, particularly that there would be no shift between public and private institutions and that adult participation rates would continue at the levels of 1974.

4. Massachusetts Postsecondary Education Commission, The Future of Traditional Higher Education Enrollments in Massachusetts: An Analysis of Projection Theory and Methods and Projections of Selected Undergraduate Student Enrollments (1979).

This report used another variant of the population ratio methodology to project enrollments in various segments of higher education for 1978-1994. It applied a "cohort survival method," assuming a reliable relationship between 12th grade enrollments and undergraduate enrollments (full- and part-time) in higher education. This method was similar to the 1975 BHE approach, although the Commission calculated a separate ratio for each segment.

The report included projections for 1978-1994. Table 8 presents a modified version of the resulting enrollment projections for 1982. (Unlike other enrollment projections, the Commission used Budget Bureau enrollment figures for some institutions and HEGIS data for others.)

TABLE 8
Massachusetts Postsecondary Education Commission
Projections for Public Higher Education, 1982

	2-Year	4-Year	Univ.	Profess. & Spec.	Total
Proj.	29,061	31,744	28,935	2,903	92,643
Actual	31,155	23,028*	34,866	3,399	92,448

*First semester after Boston State College closed.

Overall, the Commission projected public higher education enrollments to be 92,643 in 1982. For the institutions analyzed, the actual enrollments in 1982 were 92,448. While this seems remarkably accurate, some caveats are in order.

Differences between actual and projected enrollments for individual segments are significant. The model over-projected enrollments in 4-year colleges by more than 8,000 and under-projected enrollments at universities by almost 6,000. Most of these discrepancies can be accounted for by the "unprojected" closure of Boston State, and by the rapid growth of the University of Lowell. Moreover, the Commission analysis omitted Southeastern Massachusetts University, the University of Massachusetts-Boston, and Quincy Junior College (1982 enrollment total 19,710).

The projection methodology used in this report reflects changes only in the population of 12th graders and no other population shifts. It ignores changes in participation rates for any group; and it does not account for variations in individual institutions or for shifts between segments. Despite its apparent accuracy, the model has fundamental weaknesses because segmental and institutional projections are vital for planning purposes.

Two more general examinations of the future of public higher education in Massachusetts, [Executive Office of Educational Affairs, Paul Parks, Secretary, Working Paper on Public Higher Education Planning -Draft (1977); and Richard M. Stafford and Lawrence Lustberg, Higher Education in Massachusetts: Issues in

Their Context. Sloan Commission on Government and Higher Education (1978)], touched briefly on enrollment trends. Neither, however, attempted a sophisticated projection.

Secretary Parks, assuming no major changes in the participation rates of various age groups, examined population projections and concluded that

> "Because the pool from which [80 percent of undergraduate students] are drawn will shrink by about twenty-five percent between 1980 and 1995, it is reasonable to predict that full-time enrollment in this age bracket will decline by the same percentage".

This decline of up to 19,000 students in public higher education, "roughly equivalent to the combined student bodies of nine community colleges or six state colleges," Secretary Parks noted, "could force the Commonwealth to close down or consolidate several of its institutions."

Stafford and Lustberg reviewed the assertions of the Board of Higher Education (1975) and of Paul Parks, but declined to endorse either report's findings. They concluded their brief assessment of enrollment prospects by asserting that

> "the information available today indicates that overall enrollments in Massachusetts' colleges and universities will decline somewhere between 7 and 13 percent next decade [1980's] and by as much as 25 percent by 1995."

Comparison of Report Findings

Unfortunately, the results of these four studies cannot be directly compared due to the use of different data bases and definitions. We can, however, present a comparison of how well the models did in comparison with what actually came to pass. Projection figures from each of five reports are compared here with actual fall enrollments five to seven years after the original projection was made.

TABLE 9

Report	Projection	Actual	Percentage Difference
1. BHE (1969) 1975	411,000*	384,485	+7%
2. OSTI (1973) 1980	325,616*	416,737	-22%
3. OSTI (1974) 1980	368,209*	416,737	-12%
4. BHE (1975) 1980	411,286*	416,737	-1.1%
5. Post. Ed. Comm. (1976) 1982	92,643**	92,448	0%

*Includes all types and categories of students.
**Includes public sector undergraduate enrollment only.

Conclusion

Clearly there has been no lack of effort in making enrollment projections for public higher education in Massachusetts. Each attempt summarized above applied the most sophisticated projection model available at the time, and each relied on the latest data. Yet their cumulative lesson is that enrollment projection is a very uncertain business. No generalizations emerge as to what methodology works best overall. Some models are close to accurate in the aggregate but far off the mark by type of institution. Others seem to work well for specific types of students going to specific types of institutions while being no more than guesswork under other conditions.

Several limitations common to all four of these studies continue to impede accurate enrollment forecasting today:

1) the lack of reliable historical data on students and their attendance patterns;

2) the unpredictability of powerful external factors, such as the state of the economy, the perceived market value of a college degree, and participation by students in "non-traditional" categories;

3) uncertainty about the effects of higher education policy changes, notably with regard to financial aid and tuition, and of institutional realignments within the higher education system.

The greatest weakness of all these approaches was their reliance on fixed assumptions, which produced singular enrollment projections. Models used during the 1950's and 1960's (trend analysis, cohort survival method, regression analysis) relied exclusively on historical data; they assumed that the future would look like the past. Demographic models popular in the seventies incorporated changes in external conditions such as age, sex and ethnic distribution, occupational goals, and geographic location of population. These models had the strength of acknowledging the possiblility of change, but had the weakness of being tied to a "best guess" of what those changes would be.

Today, interactive computer models provide an important tool that did not exist in the past. A number of state higher education agencies are using decision-simulation models to develop enrollment projections under various "what if" scenarios: "What if transfer rates are improved? What if more older students attend? What if tuition is raised by a given percentage?" While enrollment projection studies in the past arrived at set figures, computer simulation models allow planners to derive varying projections based on numerous sets of assumptions.

More important, they remind higher education leaders that the future is not simply something that will happen "to" them. By graphically illustrating the implications of policy options, computer simulations can help decision-makers realize that, if they cannot predict the future, they may be able to shape it.

4. FUTURE ENROLLMENT: SOME EXAMPLES

As the maps on the following page indicate, Massachusetts is not expected to experience any growth in total population by 1990 or even 2000. However, significant shifts in the age distribution of the Commonwealth's citizens will occur. The table below indicates the nature and magnitude of these shifts: the number of 15-19 year olds is projected to drop by 33% and the number of 20-24 year olds by about half that figure, by 1990; the number of 25-29 year olds is projected to increase by 6%, 30-34 year olds by 13% and 25-39 year olds by 32% during the same period.

TABLE 10

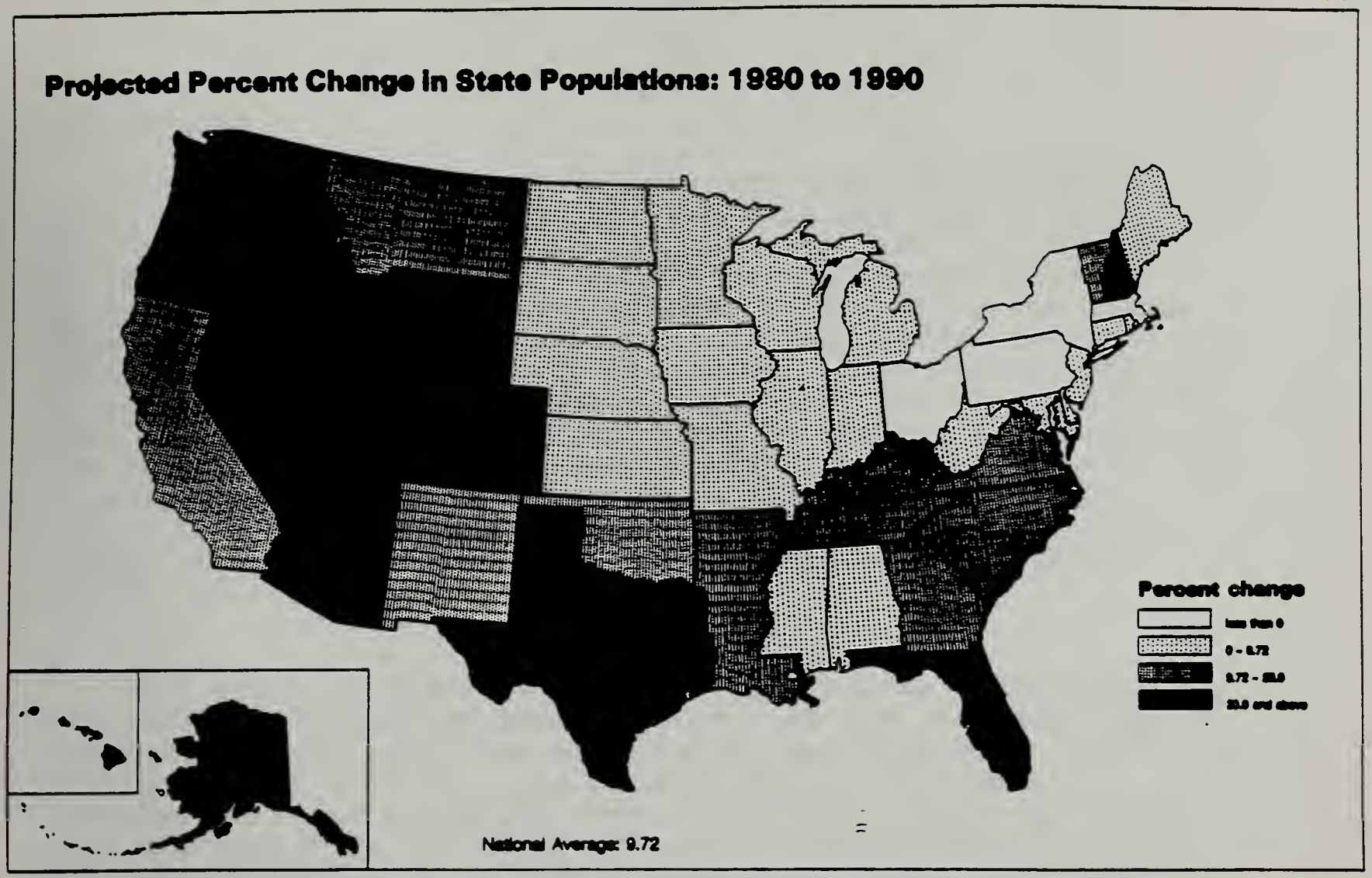
Massachusetts Population Projections
1980-1990 by Age Group

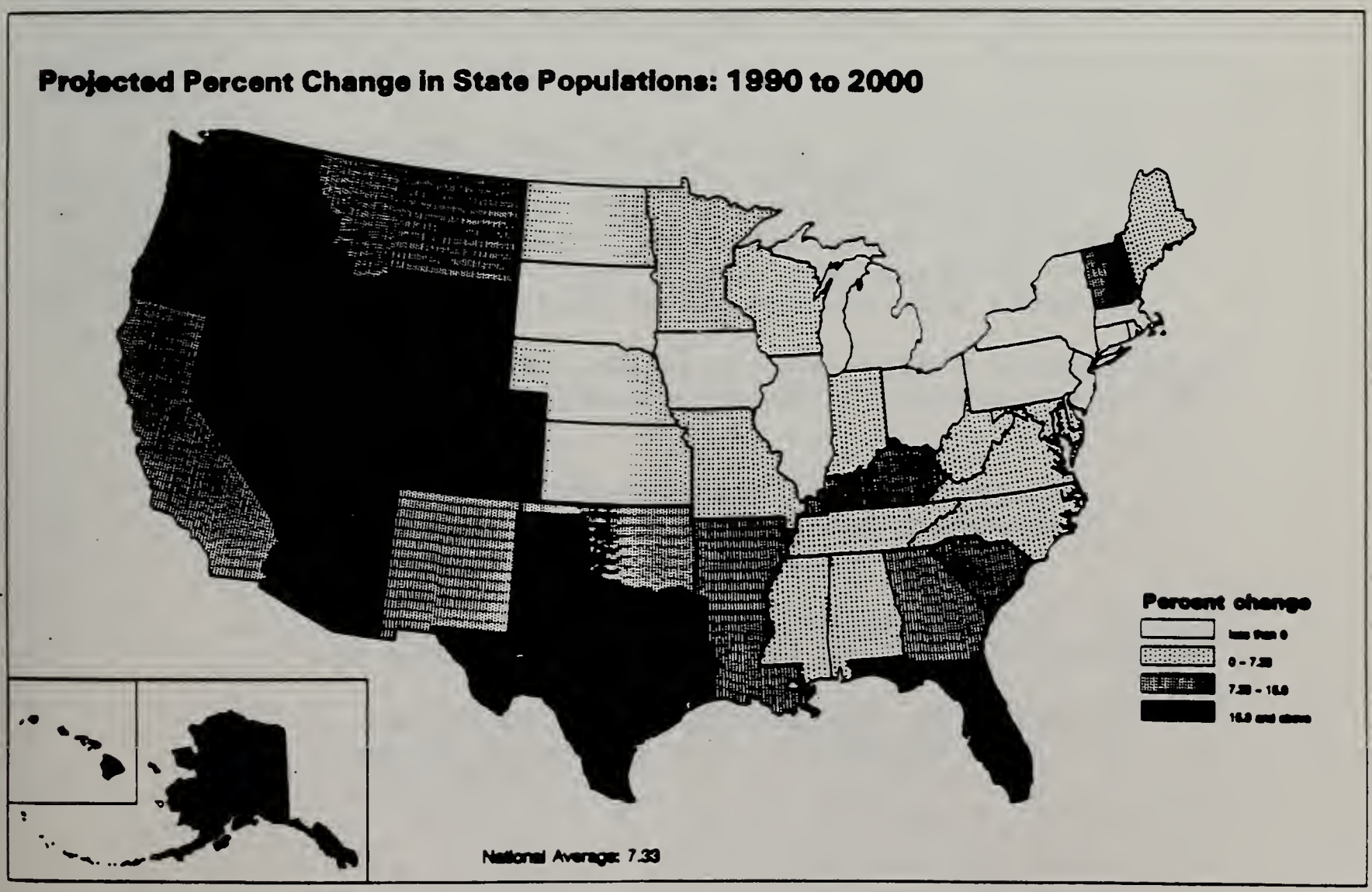
Age Group	1980 State Population	% Change Projected In Pop. 1980-1990	1990 State Pop.
Under 15	1,173,200	-11	1,047,600
15-19	548,200	-33	365,400
20-24	552,900	-18	454,000
25-29	489,200	6	519,900
30-34	446,400	13	506,400
35-39	348,600	32	459,700
40-44	278,700	52	424,800
45-59	895,900	-6	845,400
60+	1,003,900	8	1,080,700
Total	5,737,000	6%	5,703,900

Source: U.S. Bureau of the Census Current Population Reports, Series P -25, No 937, Provisional Projections of the Population of State By Age and Sex: 1980 to 2000. U.S. Government Printing Office, Washington, D.C., 1983.

There can be no doubt that the decrease in the traditional college-age population will have significant impact on college enrollments during the next decade. But the potential impact of the simultaneous increase in the numbers of 25-44 year olds may to some extent offset these expected declines by providing larger numbers of nontraditional adult learners. Moreover, if the college-going rate of our 18-year-olds rises to match the levels in some other states, the traditional-student decline may be somewhat less serious than the raw demography suggests.

CHART VI:


Projected Percent Change in State Populations: 1980 to 1990
Percent change
National Average: 9.72


Projected Percent Change in State Populations: 1990 to 2000
Percent change
National Average: 7.33

Methodology

The charts which accompany this section are simulations based on the latest available census data and 1982 enrollment data from the public colleges and universities. We have deliberately chosen to call them "examples" rather than projections because they are designed to dramatize the issues arising from the changes in our population, rather than to offer a single prediction of the future. They demonstrate the possible impact of the 18-year-old decline, and of potential increases in college attendance rates by various age groups, on the various segments of the public higher education system. We do not contend that any one of these examples is what will happen to anyone of the segments within Massachusetts public higher education, much less to any individual institution within the system.

This analysis deals only with undergraduate enrollments at our public colleges and universities. It does not distinguish between full and part time enrollment, but uses head count, a combination of the two types of enrollment. Its basic methodology is to apply the proportions of various age groups that are presently enrolling in public higher education, by segment, to estimates of the population of these age groups in 1990. Each example makes certain assumptions about whether, and how, these participation rates will change; and calculates a total enrollment based on the assumed rates.

Example I

In this simulation, the change in age groupings of the Massachusetts population is the only variable. That is, we assume no change in college attendance rates of either traditional or non-traditional students, or of educational needs within age-groups. This implies that numerous other factors remains constant; that there will be, for example:

(1) no unexpected change in the state's economy which would invalidate the Bureau of Census population projections;

(2) no change in the current distribution of enrollments between public and independent institutions in Massachusetts;

(3) no change in the current "market shares" of each age group for each segment of the public system;

(4) no change in the percentage of out-of-state students attending public colleges and universities;

(5) no major changes in the way in which public institutions are funded and;

(6) no changes in the high school graduation rate, or in the educational preparedness of graduates.

If full and part-time undergraduate students of the same age continue to attend the same types of public institutions at the same rate as they did in the fall of 1982, head count enrollment at public colleges and universities in Massachusetts would decline by 19% by 1990.

TABLE 11.

Distribution of Fall 1982 Undergraduate Head Count by Age for Massachusetts Public Colleges and Universities

	Community Colleges		State Colleges *		Universities **		Total	
	#	%	#	%	#	%	#	%
15-19	17,721	33.9	10,058	42.8	18,794	38.2	46,573	37.3
20-24	13,902	26.6	10,806	46.0	21,906	44.6	46,615	37.3
25-29	7,668	14.6	1,398	5.9	4,215	8.6	13,281	10.6
30-34	4,917	9.4	570	2.4	1,772	3.6	7,259	5.8
35-39	3,113	5.9	351	1.5	982	2.0	4,446	3.6
40-44	1,738	3.3	156	.7	666	1.4	2,560	2.0
45-59	2,070	4.0	138	.6	478	1.0	2,686	2.1
60+	1,216	2.3	39	.2	326	.7	1,581	1.3
TOTAL	52,346	100.	23,516	100.1	49,139	100.1	125,001	100.

* Excludes Massachusetts College of Art and Massachusetts Maritime Academy

** Excludes University of Massachusetts Medical School

SOURCE: 1982 HEGIS SUPPLEMENTAL STUDENT DATA SURVEY

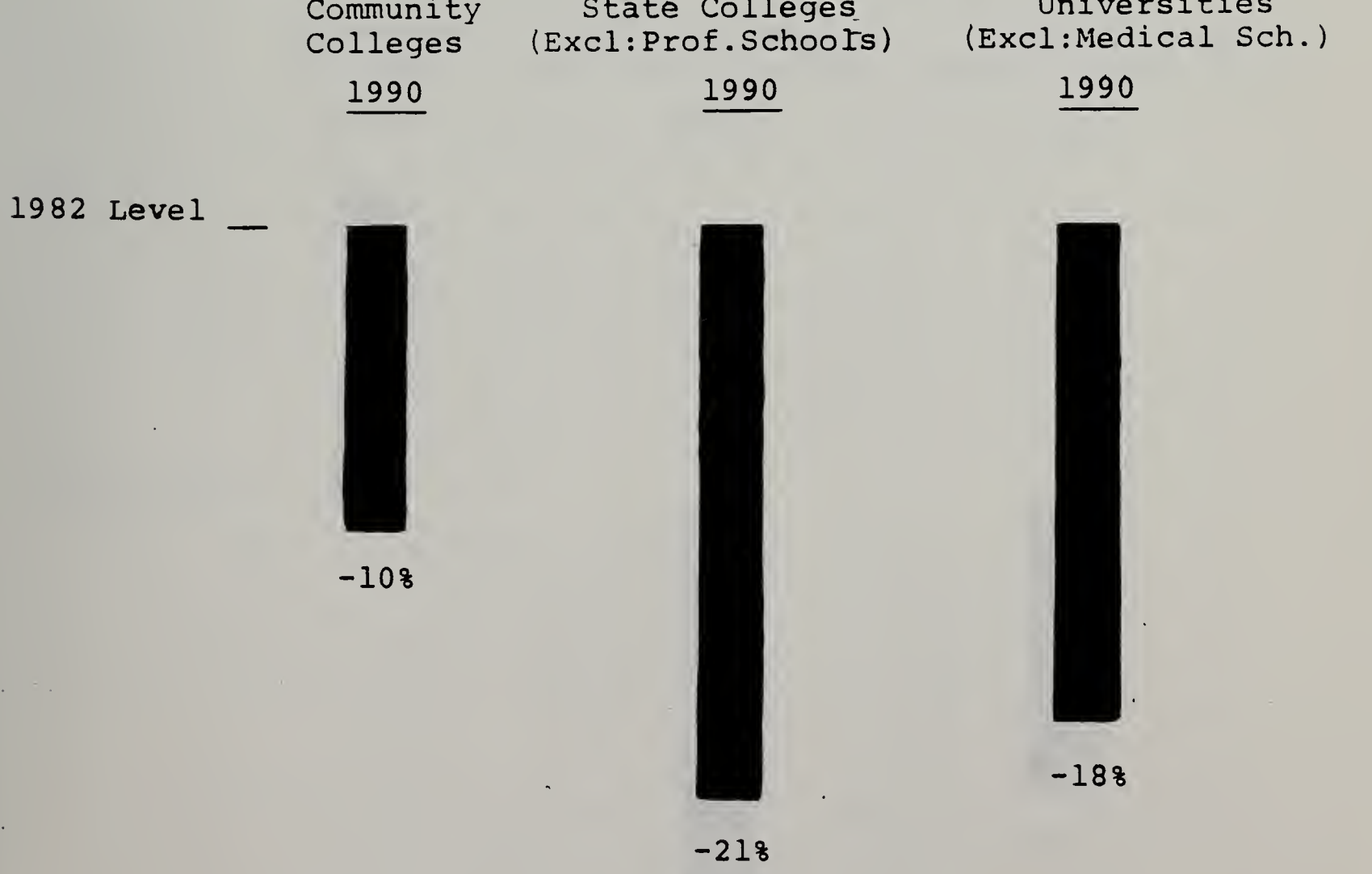
(Includes credit bearing continuing education headcount.)

However, as the preceding table shows, there are significant differences in the age mix of students currently attending various types of public colleges and universities in the state. For this reason, if students of the same age continue to have the same participation rates, the decline would not be distributed uniformly across the public system. The largest declines (18-21%), would be felt by those universities and state colleges which currently have the greatest dependence upon traditional age students.

The least decline would be experienced by the community colleges, which already draw close to 40% of their enrollments from the 24 and older age groups. Thus, if 1982 participation patterns remain exactly the same at our public colleges and universities in Massachusetts, and the latest census of population projections for the state hold, the following declines in undergraduate head count would result:

CHART VII: EXAMPLE # 1.

PATTERN OF DECLINE IN PUBLIC COLLEGE & UNIVERSITY UNDERGRADUATE HEAD COUNT ENROLLMENT FACTORING IN POPULATION CHANGE ONLY



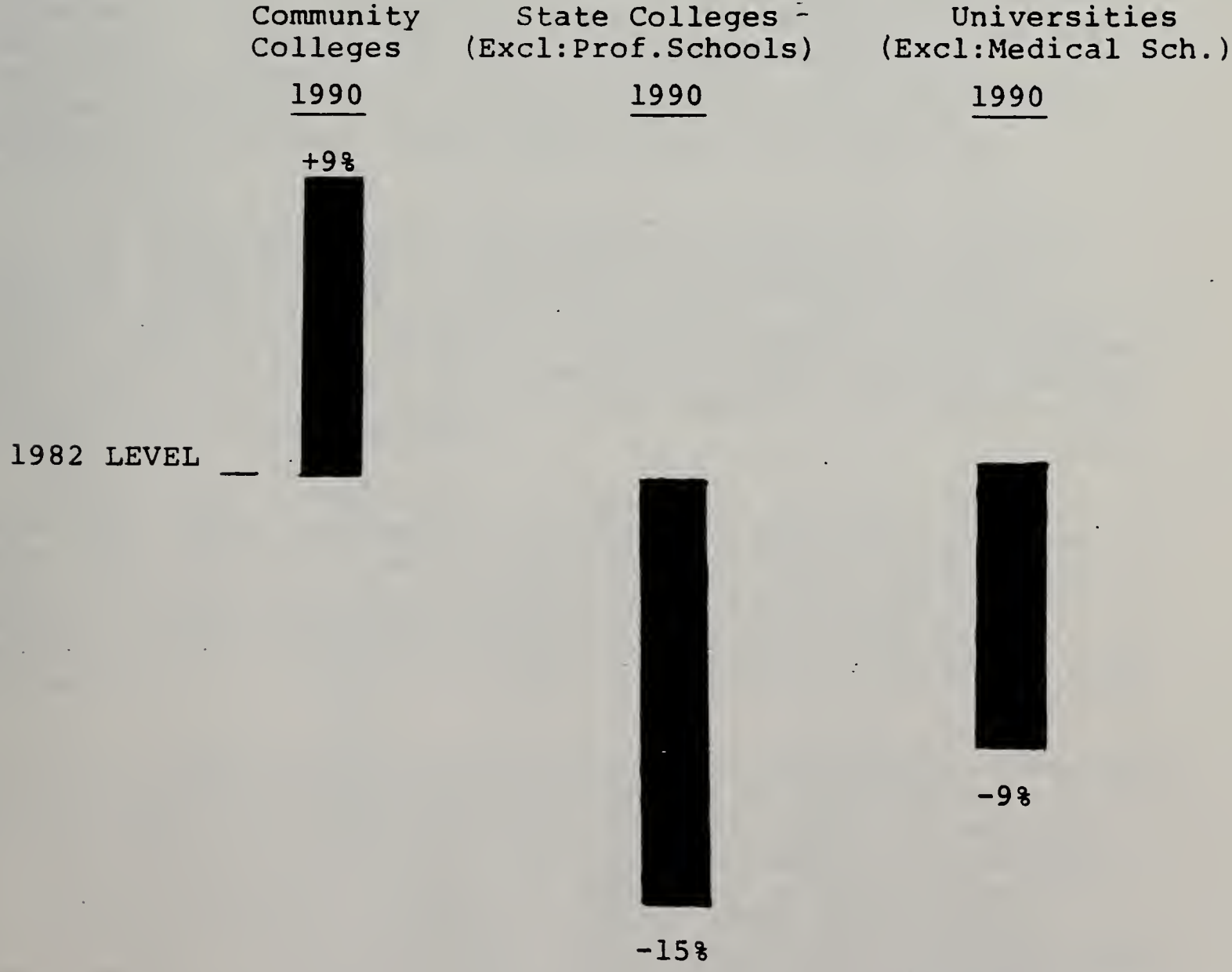
OVERALL DECLINE: -19%

Example II

It is very likely that both the increased recruitment efforts of colleges and universities geared to the older student, and the still growing need for a more highly trained work force, will increase the college participation rate of individuals in the 25-44 age brackets. If this is indeed the case, the following enrollment example is not an unreasonable possibility. This simulation looks at the combined impact of population changes coupled with a 50% increase in the participation rate of older students (i.e., 25-44 year olds). Again, because the 1982 participation rates vary greatly by segment, so does the net effect of these assumptions. As the chart below shows, in this example community college head count enrollment would actually increase by 9% and state college and university enrollments would drop by 15% and 9% respectively.

CHART VIII: EXAMPLE # 2.

PATTERN OF CHANGE IN PUBLIC COLLEGE & UNIVERSITY UNDERGRADUATE HEADCOUNT ENROLLMENT FACTORING IN POPULATION CHANGE & A 50 % INCREASE IN PARTICIPATION RATES OF 25 - 44 YEAR OLDS



Examples III and IV

Massachusetts stands above the national average in the percentage of its 17 and 18 year-olds who graduate from high school (i.e., Massachusetts 78.9% vs. U.S. 72.0%), but fares less well among industrial states. The Commonwealth also lags in terms of the proportion of those graduates going on to college. For example in Connecticut, of the 81% of the age-group which graduates from high school, approximately 60% go on to postsecondary study; in Massachusetts the figure is only 50%. Connecticut is a somewhat wealthier state than Massachusetts, but has a higher percentage of minorities in its high-school population. Its record, therefore, is a plausible model of future trends in Massachusetts. That record indicates that it is possible that the participation rates of the traditional pool may increase, even as their total numbers decline.

Examples III and IV simulate the impact of 5% and 15% increases in participation rates of the 15-24 year-old age groups in conjunction with the previous assumption of a 50% increase in the participation rate of the older student (25-44 year olds). Because the entry of greater numbers of traditional students into higher education has historically favored public-sector growth disproportionately, the 5% assumption, at least, seems well within the bounds of possibility.

A 5% increase in the participation rates of 15-24 year olds, in conjunction with improved recruitment of older students (Example III) would bring overall 1990 enrollments back to 1982 levels. However, it would require a 15% increase (Example IV) to restore enrollments at public universities to their 1982 total; and even that improvement would leave a gap in the state college segment.

These results emphasize two important points. First, relatively small increases in traditional-age participation rates will still have more impact on enrollment totals than larger increases in participation among older students. Second, present enrollment levels can nevertheless be maintained only through increased recruitment of students over 25 years old.

These examples help us understand the demographic realities that will shape the aggregate demand for higher education in Massachusetts for the rest of the century. They do not tell us the enrollment prospects for any given college or university. The calculations are based, for instance, on the continuation of present patterns of student choice. Many authorities believe that, on the contrary, universities will maintain their traditional enrollments at the expense of colleges. Changes in financial aid programs could radically shift the public-

CHART IX: EXAMPLE # 3.

PATTERN OF CHANGE IN PUBLIC COLLEGE & UNIVERSITY UNDERGRADUATE HEADCOUNT ENROLLMENT FACTORING IN POPULATION CHANGE & A 50 % INCREASE IN PARTICIPATION RATES OF 25 - 44 YEAR OLDS AND A 5 % INCREASE IN PARTICIPATION RATES OF 19 - 24 YEAR OLDS.

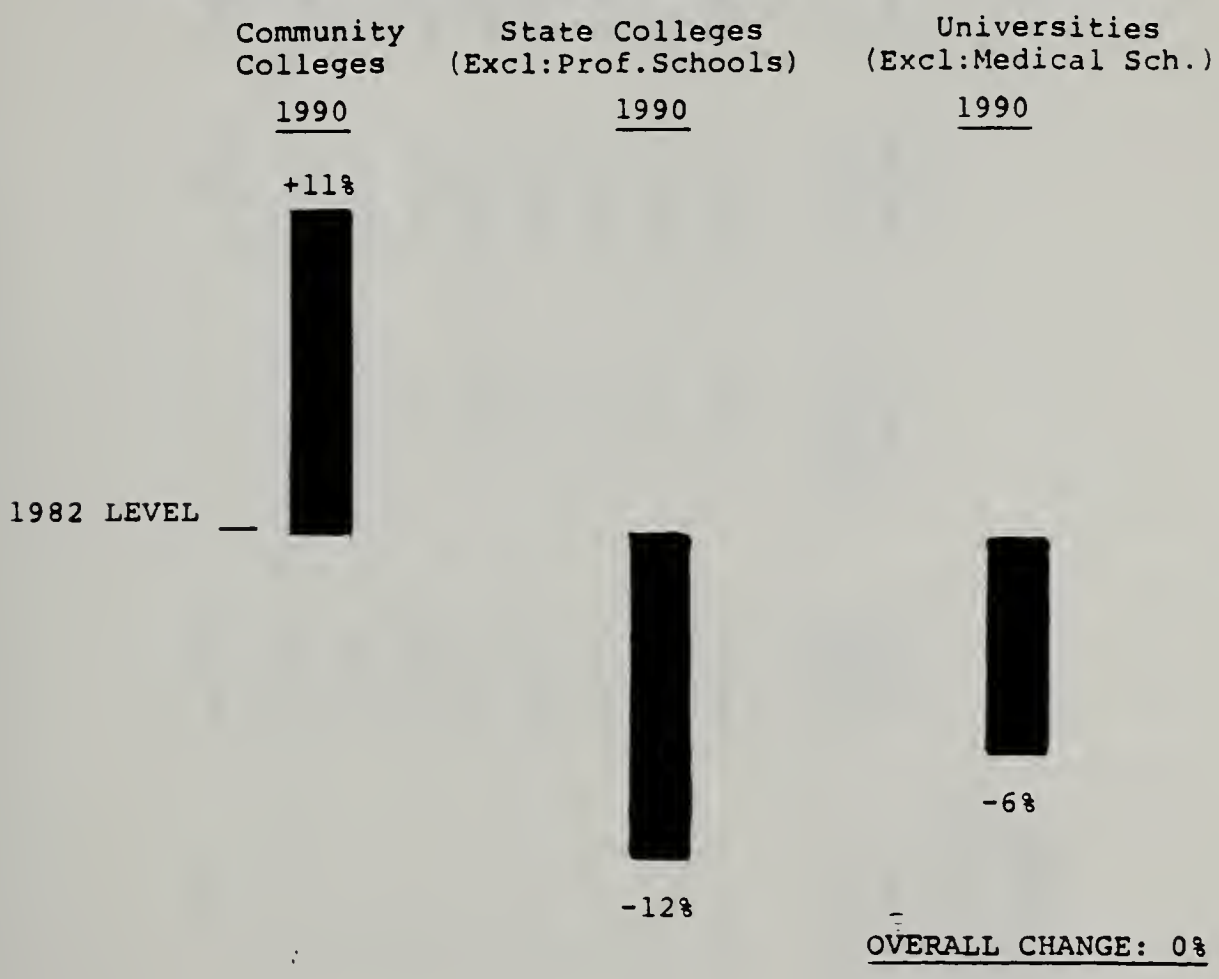


CHART X: EXAMPLE # 4.

PATTERN OF CHANGE IN PUBLIC COLLEGE & UNIVERSITY UNDERGRADUATE HEADCOUNT ENROLLMENT FACTORING IN POPULATION CHANGE & A 50 % INCREASE IN PARTICIPATION RATES OF 25 - 44 YEAR OLDS AND A 15 % INCREASE IN PARTICIPATION RATES OF 19 - 24 YEAR OLDS.

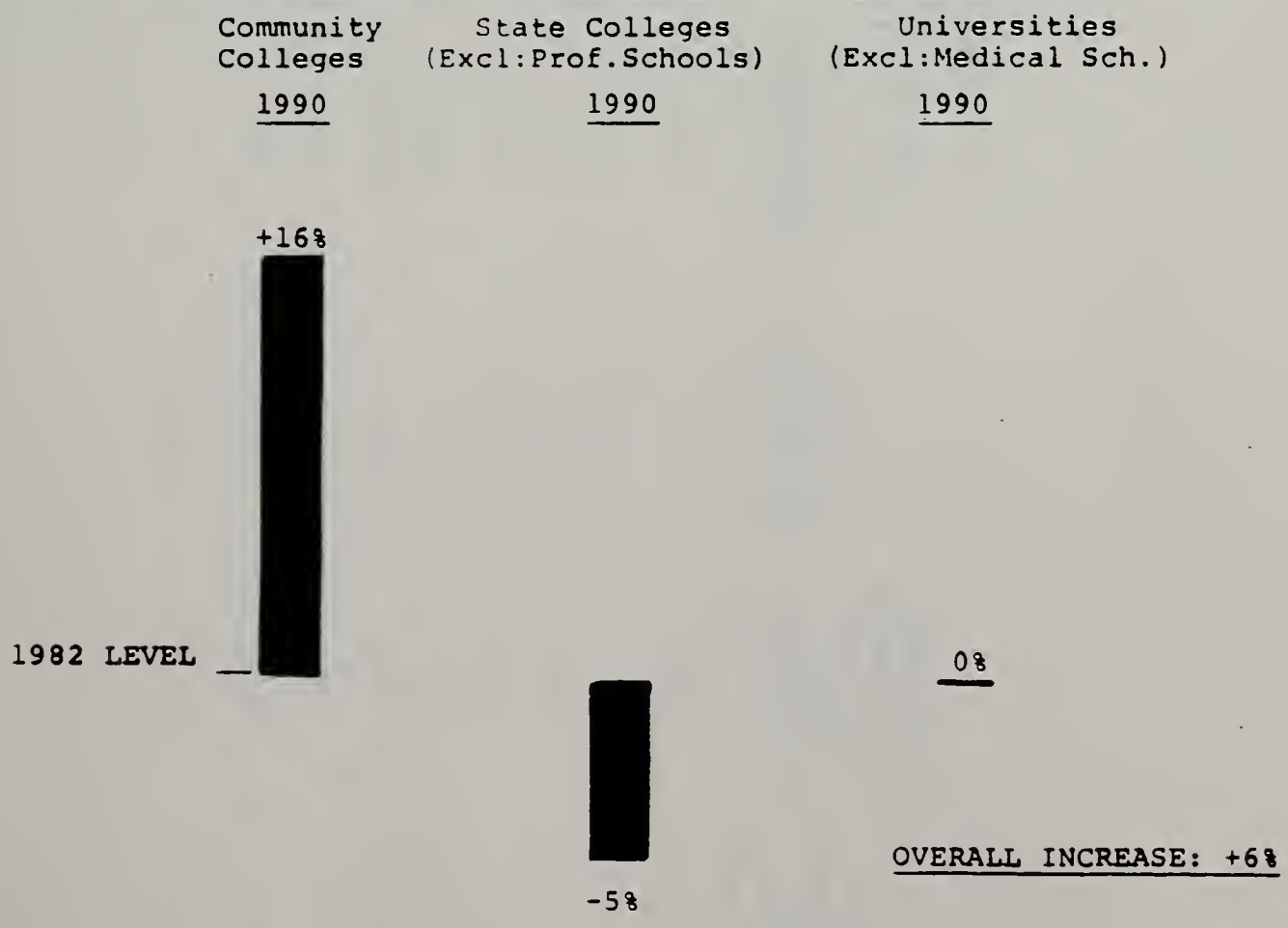


TABLE 12.

COMMUNITY COLLEGE ENROLLMENT SCENARIOS FOR FULL AND PART TIME HEAD COUNT IN THE YEAR 1990

Age Group	1980 Mass. Population	% Change In Population 1980 - 1990	Projected 1990 State Population	1982 H/C* % Distribution	1982 Actual Head Count	1990 H/C* If: Age Group Yeild is Same As 1980	1990 H/C* If: 25-44 Year Old Yeild Incr. 50%	1990 H/C* If: 25-44 Year Old Incr. 50% and 15-24 Year Old Incr. 5%	25-44 Incr. 50% and 15-24 Incr. 15%
15-19	548,200	-32.8	365,400	33.9	17,721	11,812	11,812	12,393	13,573
20-24	552,900	-17.9	454,000	26.6	13,903	11,416	11,416	11,965	13,105
25-29	489,200	+ 6.3	519,900	14.6	7,663	8,149	12,244	12,444	12,244
30-34	446,400	+13.4	506,400	9.4	4,917	5,578	8,356	8,356	8,356
35-39	348,600	+31.9	459,700	5.9	3,113	4,105	6,137	6,137	6,137
40-44	278,700	+52.4	424,800	3.3	1,738	2,649	3,951	3,951	3,951
45-59	895,900	- 5.6	845,400	4.0	2,070	1,953	1,953	1,953	1,953
60+	1,003,900	+ 7.7	1,080,700	2.3	1,216	1,310	1,310	1,310	1,310
TOTAL	4,563,800	+ 2.0%	4,656,300	100%	52,346	46,972	57,179	58,309	60,629

* Head Count

TABLE 13.

STATE COLLEGE* ENROLLMENT SCENARIOS FOR

FULL AND PART TIME UNDERGRADUATE HEAD COUNT IN THE YEAR 1990

Age Group	1980 Mass. Population	% Change In Population 1980 - 1990	Projected 1990 State Population	1982 H/C** % Distribution	1982 Actual Head Count	1990 H/C**If: Age Group Yeild is Same As 1980	1990 H/C**If: 25-44 Year Old Yeild Incr. 50%	1990 H/C**If: 25-44 Year Old Incr. 50% and 15-24 Year Old Incr. 5%	25-44 Incr. 50% and 15-24 Incr. 15%
15-19	548,200	-32.8	365,400	42.8	10,058	6,687	6,687	7,021	7,690
20-24	552,900	-17.9	454,000	46.0	10,806	8,873	8,873	9,296	10,181
25-29	489,200	+ 6.3	519,900	5.9	1,398	1,486	2,262	2,262	2,262
30-34	446,400	+13.4	506,400	2.4	570	647	987	987	987
35-39	348,600	+31.9	459,700	1.5	351	463	690	690	690
40-44	278,700	+52.4	424,800	.7	156	238	382	382	382
45-59	895,900	- 5.6	845,400	.6	138	130	130	130	130
60+	1,003,900	+ 7.7	1,080,700	.2	39	42	42	42	42
TOTAL	4,563,800	+ 2.0%	4,656,300	100 %	23,516	18,566	20,053	20,810	22,364

* Excludes Massachusetts College of Art and Massachusetts Maritime Academy
** Head Count

TABLE 14.

UNIVERSITY* ENROLLMENT SCENARIOS FOR

FULL AND PART TIME UNDERGRADUATE HEAD COUNT IN THE YEAR 1990

Age Group	1980 Mass. Population	% Change In Population 1980 - 1990	Projected 1990 State Population	1982 H/C** % Distribution	1982 Actual Head Count	1990 H/C**If: Age Group Yeild is Same As 1980	1990 H/C**If: 25-44 Year Old Yeild Incr. 50%	1990 H/C**If: 25-44 Year Old Incr. 50% and 15-24 Year Old Incr. 5%	25-44 Incr. 50% and 15-24 Incr. 15%
15-19	548,200	-32.8	365,400	38,2	18,794	12,533	12,533	13,160	14,413
20-24	552,900	-17.9	454,000	44.6	21,906	17,988	17,988	18,877	20,675
25-29	489,200	+ 6.3	519,900	8.6	4,215	4,480	6,707	6,707	6,707
30-34	446,400	+13.4	506,400	3.6	1,772	2,010	3,038	3,038	3,038
35-39	348,600	+31.9	459,700	2.0	982	1,295	1,931	1,931	1,931
40-44	278,700	+52.4	424,800	1.4	666	1,015	1,529	1,529	1,529
45-59	895,900	- 5.6	845,400	1.0	478	451	451	451	451
60+	1,003,900	+ 7.7	1,080,700	.7	326	351	351	351	351
TOTAL	4,563,800	+ 2.0%	4,656,300	100 %	49,139	40,123	44,528	46,044	49,095

* Excludes University of Massachusetts Medical School

** Head Count

independent balance. Economic opportunity could draw more people into the workforce, or cause more to seek advanced training. And effective leadership at individual campuses will inevitably prove more important than aggregate segmental trends.

The question of enrollment distribution both within the public sector and between the public and independent sectors, will be influenced by several powerful forces that defy prediction, including policy decisions of the Board of Regents.

5. ENROLLMENT PATTERNS

Predictions of how students will distribute themselves among sectors and institutions must depend upon estimates of how many students there will be, who they will be, how much they will be prepared to spend, and what they will want to study. Therefore we offer not a projection of enrollment patterns but an overview of the forces that will determine those patterns. The patterns are two-dimensional; we must consider both distribution of enrollment between public and independent sectors, and distribution by segment within each sector. In practice this latter aspect may be limited to the public sector, because it is a relatively coherent system unified by price and other characteristics. (Historical and present enrollment patterns in Massachusetts are presented in Tables 15 and 16.)

Student Choices

Students choose their college or university according to a number of factors.[6] These include price, attractiveness (of which prestige is a major component), convenience (location/schedule), and program. The weight and even the definition of each factor varies from individual to individual, and changes with the times. In recent years, students have increasingly sought programs directed toward occupational goals. However, demography itself will alter the job market. With fewer new entrants flooding the labor pool, liberal studies may regain popularity.

The active role of the colleges in student distribution is declining as competitive pressure eases and we enter a "buyer's market." A considerably smaller proportion of students will be enrolling in "competitive" colleges, simply because many schools will become less competitive in their admissions process. Minimum standards in the public sector will redirect some students, though there are indications that their greatest effect will be upon institutional roles and image.

TABLE 15.

Public/Private Enrollments and State Totals, Selected Years 1970 - 1981

		Public Enrollment	Public as % of Total	Private Enrollment	Private as % of Total	Massachusetts Total	
1970	Undergraduate	80,062	37%	135,853	63%	215,915	100%
	Graduate and 1st Professional	13,224	25%	40,023	75%	53,247	
	Unclassified[2]	7,220	37%	12,446	63%	19,666	
	TOTAL	100,506	35%	18,,322	65%	288,828	100%
1975	Undergraduate	106,370	43%	142,950	57%	249,320	
	Graduate and 1st Prof.	15,170	24%	47,128	76%	62,298	
	Unclassified	23,731	53%	21,013	47%	44,744	
	TOTAL	145,271	41%	211,091	59%	356,362	
1980	Undergraduate	128,139	44%	162,760	56%	290,899	
	Grad. & 1st Prof.	10,551	17%	50,134	83%	60,685	
	Unclassified	40,730	63%	24,423	37%	65,153	
	TOTAL	179,420	43%	237,317	57%	416,737	
1981	Undergraduate	127,789	44%	165,494	56%	293,283	
	Grad. & 1st Prof.	12,101	19%	52,045	81%	64,146	
	Unclassified	40,168	60%	26,896	40%	67,054	
	TOTAL	180,058	42%	244,435	58%	424,493	

Notes: [1]Public refers to the state supported colleges and includes total institutional enrollment (state supported and continued education) as of October of a given year.

[2]Unclassified students are those enrolled in credit bearing courses (both undergraduate and graduate) but have not matriculated into a degree program.

Source: HEGIS Fall Enrollment data (headcount)

TABLE 16.

1982 FALL ENROLLMENT BY LEVEL AND TYPE OF INSTITUTIONS

	PUBLIC			INDEPENDENT		
	TOTAL	FULL TIME	PART TIME	TOTAL	FULL TIME	PART TIME
		UNDERGRADUATE				
University	51,896	39,412	12,484	87,775	60,531	27,244
4 Year	38,619	25,980	12,639	66,624	53,710	12,914
2 Year	75,648	28,877	46,771	23,028	12,537	10,491
Other 2 Year	4,018	2,203	1,815	0	0	0
Subtotal	170,181	96,472	73,709	177,427	126,778	50,649
	GRADUATE					
University	8,447	3,129	5,318	31,867	18,240	13,627
4 Year	6,012	101	5,911	12,692	3,415	9,277
Subtotal	14,459	3,230	11,229	44,559	21,655	22,904
	FIRST PROFESSIONAL					
University	415	415	0	9,094	8,372	722
4 Year	0	0	0	3,556	2,670	886
Subtotal	415	415	0	12,650	11,042	1,608
	UNSPECIFIED UNCLASSIFIED					
University	0	0	0	6,102	961	5,141
4 Year	0	0	0	0	0	0
Subtotal	0	0	0	6,102	961	5,141
	TOTAL ENROLLMENTS					
GRAND TOTAL	185,055	100,117	84,938	240,738	160.436	80,302

Enrollments

The greatest increase in higher education enrollments over the past several decades has been achieved by bringing new groups of students into the system. The principal components of growth were a tremendous broadening of the socioeconomic spectrum represented, and a great increase in the participation rate of women[7]. There remain some groups with a potential for supplying additional "new" students--that is, individuals who have not in the past regarded themselves as potential "college material". These include a certain number of people at the lower end of the socioeconomic scale, largely in inner-city areas; individuals whose career aspirations fall in traditional blue-collar fields; and a residue of what might be called "retrospective entrants," older members of groups whose assimilation into the higher education market is now substantially complete.

These groups have been concerned with convenience and cost, and have been interested in occupationally-oriented programs. They seem, therefore, to be natural constituencies of the community colleges. Four-year public institutions will also get some of this enrollment directly though they tend to be less conveniently located and to have less attractive (i.e., practical) programs.

A number of occupationally-oriented independent institutions, including proprietary schools as well as 2- and 4-year colleges, have been quite successful in recruiting among these emergent student groups--despite a serious pricing disadvantage[8]. The key word is "recruiting". More active recruitment is required to bring these students into higher education than was the case with previous new entrant groups, because they are not coming from a middle-class background, even a first-generation one.

Most of the enrollment increase is likely to result from enhanced participation rates among people who already have some college background--continuing and returning students. The population is getting older and, more important, it is getting better-educated. In 1980, 20% of Massachusetts residents over 25 were college graduates, and 36% had some college education. These figures will continue to rise for the rest of the century. Moreover, the participation rate of this group is higher than that of the population at large. In other words, older students are more likely to be people who have already had some college education, who are now completing a degree or improving their skills, than to be individuals who did not go to college at 18 and are belatedly entering higher education for the first time.

This group consists largely of upper-division and graduate-level students. However, significant numbers may choose to enroll in individual community-college courses,

increasing the headcount in that segment without a parallel rise in FTE's. Convenience will be of major importance in this market; program will be important, too, although it will include a fair number of students seeking general education.

Older students represent a good potential market for the public sector--in which the independent sector has so far done very well. The same factors that have allowed the independents to attract "new" students are at work here: responsive programs and intensive recruitment. Recruiting and convenience (scheduling, transfer policy, etc.) are to a great extent matters of institutional policy.

Among older, returning students pursuing career goals, the public sector is at a certain disadvantage. The state colleges are only beginning to offer a full range of upper-division and graduate courses in the more rapidly growing occupational fields. This problem is reflected in the low graduate enrollments in that segment. Independent institutions--not only universities, but four-year colleges--have entered the market with more initiative and flexibility. Moreover, the fact that continuing and graduate education in the state colleges is not directly subsidized by the Commonwealth reduces the public-sector price advantage for these students. A change in this policy could therefore bring an enrollment shift toward the state colleges.

Enrollment Shifts from Independent to Public Higher Education

It is clear that, for both traditional and nontraditional students at all levels, Massachusetts public higher education is likely to become more attractive, relative to the independent sector. Though the system has been slower to develop more market-responsive programs, and to institute strong recruitment and public relations efforts, its improving quality and lower cost places it in a fundamentally strong competitive position. Though the policy of the Board of Regents has been to avoid direct competition between the sectors, there are a number of additional factors that could contribute to a shift of enrollment from independent to public higher education.

There is a subtle yet powerful demographic trend favoring the image of Massachusetts public higher education. Older residents, the nontraditional students and the parents of traditional students, have been until now products of an era in which the public system had low visibility and low prestige. Individuals who came of age in the 60's and 70's, and migrants from other parts of the country, will surely have a stronger and more favorable image of public higher education.

The decrease in the pool of traditional students could lead to the lowering of standards or the reduction in programs at some independent institutions. Independent colleges and universities beset by financial problems, or unable to maintain

admissions standards, could begin to lose students to less expensive public counterparts--thus exacerbating their difficulties. In view of the price differential between the sectors, the stability of present enrollment patterns depends upon the persistence of a widespread belief that individual independent institutions are "worth the difference."

Stability of the distribution also depends upon stability of the effective size of that price differential. The most likely cause of a radical shift of enrollment from independent to public higher educaton would be further cuts in financial aid for students, or the failure of aid levels to keep pace with rising costs. As the state most heavily dependent upon independent higher education, Massachusetts is more vulnerable to such cuts than any other. Even in the face of present demographic trends, a drastic reduction in federal aid programs could actually flood our public system beyond its capacity with applicants unable to afford independent colleges.

Financial Aid

Financial aid is, in fact, the wild card in enrollment predictions. Changes in the availability of student aid are the most likely source of error in projections; ther impact could be much greater than any possible demographic miscalculation. Nor can we say with assurance what the overall effect of any particular change would be.

One certainty is that a tighter financial aid situation would affect the independent sector disproportionately, in part because fewer students would come to Massachusetts from out of state. At the same time, many in-state students would be forced to choose public higher education on grounds of price alone. As a result, major aid cuts would affect all of the independent institutions, though some would be able to maintain enrollment levels (at a lower level of selectivity). There would be a large shift to the public sector, and a serious net loss of out-of-state enrollment. (Because Massachusetts is a large net importer of students, there would be little compensating stay-at-home effect.)

The Third Sector

A large proportion of the organized education of Americans 18 and older goes on outside the higher education system, in the workplace. Despite some predictions to the contrary, it appears unlikely that corporate training programs will divert existing student groups, in large numbers, from colleges and universities. However, they probably will attract some potential students whom these institutions hope to enroll.

The Commonwealth is better seved, on the whole, by academic than by corporate continuing education programs. This is because academic programs are more general, and thus more

adaptable and more transferable; while company programs are likely to be narrowly focused on current corporate needs.

The technical continuing education market is thus a competitive field for higher education, public and private; and the leading competitors the employers themselves. If academic programs become a local standard, as in California, employers will have to offer them; otherwise, they will generally prefer in-house courses. The market is all the more complicated because it is an interstate market, in which many institutions (including the University of Massachusetts) offer credit courses and degree programs regionally or nationally.

6. IMPLICATIONS FOR HIGHER EDUCATION

The implications of the new demographic conditions for higher education in Massachusetts are varied, complex and potentially critical to our future. There is great uncertainty associated with the burgeoning literature on future enrollments. As previously noted, hardly any two experts agree. Pessimists argue that we are in for very hard times and suggest enrollments will decrease 15 to 20%. Others, noting the increase in older adults, believe enrollments will remain relatively stable or even rise. Amidst these contradictory predictions, the fact of uncertainty alone emerges. There are simply too many variables--the economy, federal and state financial aid, the draft--to accurately and exactly predict where we will be. Any forecast of the future must also recognize the great variation among institutions, their past and present enrollment patterns, and the significant difference that effective leadership can mean to a college or university. This uncertainty heightens rather than lessens the demand upon individual institutions to plan for the future.

It is premature to speak of an enrollment "crisis" for, as yet, there is no crisis. Indeed, talking about a crisis as if it already has occurred is a boon to critics of funding for higher education. Further, such talk ignores the fact that in Massachusetts, and indeed across the nation, college enrollments are either stable or slightly rising. Since 1981, enrollments in the Massachusetts public sector have increased 10 percent; and this increase has occurred despite the gradual decline in the 18 year old population.

The enrollments of traditional college-age students will decline. Basing population trends on people already born is not guesswork. The decline in this college-age population over the next decade, and particularly after 1989, will be sufficiently harsh, especially in Massachusetts, that it cannot be offset by increasing high school graduation rates or college-going rates. The 1980 census ranked states on the ratio of six year olds to nineteen year olds. Massachusetts ranked 49th, with nearly 119,000 nineteen year olds and 68,000 six year olds. Those six year olds will be eighteen in 1992.

Offsetting potential enrollment declines by recruiting out-of-state students may be particularly difficult in the future. There has always been a larger number of students who come to Massachusetts for their education than of those who leave the Commonwealth to study elsewhere. All of the Northeastern states from which Massachusetts draws students will be hit hard by the decrease in college-age population. We must assume, too, that colleges an universities in these states, equally hard pressed for students, will mount serious efforts to keep local students at home.

The changes in our population mean that most colleges will be enrolling more adult or non-traditional students. That, in turn, will affect the programs we offer, the times we offer them, and the supportive services we provide. As David Breneman has observed, "the next ten to fifteen years will be utterly unlike those of recent decades." There is nothing alarming in this. Colleges and universities effectively met the challenges created by the G.I. Bill in post World War II and the even greater challenge posed by the expansion of the 60's. There is little reason to doubt out ability to meet this new opportunity.

The new conditions created by the enrollment declines will undoubtedly benefit students. Colleges and universities will work harder to recruit students and to keep them in college. And there will be a greater effort to recruit those students traditionally underserved in our society, especially minorities. In short, improved access to higher education will be one of the positive aspects of the new enrollment conditions.

Careful planning is a prerequisite for the difficulties we will face in Massachusetts. And careful planning rests on accurate and timely information. Thus, more emphasis must be placed on building and sustaining computerized information which can be of incalculable assistance in making critical decisions. Differences over definitions of students and workload must be quickly and firmly resolved so that historical data can be established that is consistent and, therefore, comparable. One of the problems that plagued earlier efforts to project enrollment was the inconsistency of the data used.

Adequate data will allow us to better analyze enrollment trends within the public sector and between the public and independent sectors. There is a general consensus that public state colleges and non-selective independent colleges will be especially vulnerable to the new demographic conditions. Some argue that they are "overflow" institutions, the second choice of many students, and will fare badly in a buyer's market. This may or may not be true in Massachusetts, though it is worth noting that both types of institutions have demonstrated strong enrollments in this the fourth year of enrollment decline. Nevertheless, better data will provide an "early warning" system that will allow us to react sensibly and intelligently to a potential institutional crisis.

The issue of quality becomes even more important in the face of potential enrollment decline. Some campuses may be tempted to sacrifice quality for numbers. That strategy is self-defeating because quality is critical to attracting and retaining students. For that reason alone, the adoption of statewide admission standards is significant as is the implementation of academic program review. The budgeting process can be helpful in this area if institutions are informed that they cannot increase enrollment above an agreed upon level beyond which they cannot provide reputable instruction and support.

Future planning efforts should pay more attention to the excessive program elaboration and specialization that has become a historical feature of American higher education. The argument is not whether we need French professors or History professors, because we do need them. Rather the question is whether we need the present elaborate array of specialized departmental courses, particularly on the undergraduate level. Many of these courses were designed not for the needs of students but for the convenience of professors. It is even possible that individual colleges might reconsider whether majors are necessary in every field of the liberal arts. Freeing liberal arts faculty to meet the general needs of students in skills and in general education might be sensible not only economically but educationally.

RECOMMENDATIONS

1. Colleges and universities should engage in concerted enrollment planning and management. While we recommend that they adopt strategies to recruit and retain students, serious consideration should also be given to decreasing enrollment over a period of years. Increasing or even maintaining enrollment should not be an imperative for colleges and universities. Finally, we recommend that the campuses prepare long-term (e.g., five or ten year) enrollment plans. These should be revised annually based on new data and policy changes.

2. The Massachusetts public higher education system should prepare itself to serve effectively the nontraditional students who will constitute an increasing proportion of its enrollment in coming years. Many institutional plans identify adults over 22 as an important new clientele. Experience with adult students indicates that, in many ways, their learning needs are different from those of traditional-aged students. Colleges should understand and make necessary adjustments to the special needs of adults in such areas as course scheduling and location, day care, and developmental programs.

The Regents should ensure that each college and university, in its Long-Range Plan, specifies an institutional mission that is realistically responsive to changing demographic conditions. The Regents too should reconsider their segmental mission statements in view of the adaptations these conditions will require. A greater differentiation of mission among institutions, depending upon their degree of orientation toward traditional or nontraditional clienteles, may be desirable in order to provide appropriate services for all students and to guide efficient allocation of resources. (For example, a college serving mainly older students would require more day care facilities, but fewer dormitories.)

3. The Regents should act to reaffirm their commitment to assured access to public higher education for all qualified students.

The interim document on admission standards calls for increased recruitment of citizens in protected classes, especially minorities. Colleges and universities should adopt specific recruitment plans to increase the participation rates of these groups in higher education.

Financial aid policy must be monitored to assure that it meets the needs of nontraditional as well as traditional students. The Regents should be cognizant of the importance of the financial aid issue to independent higher education.

4. In order to achieve effective enrollment planning for Massachusetts higher education, the Board of Regents should take the lead in developing and maintaining essential program, enrollment, and degree data that will serve the needs not only of the public sector but the independent sector as well.

5. Historically, our public institutions have not had the same flexibility to accomodate themselves to their changing clientele as some of the independent institutions have demonstrated. This is especially true of the state colleges. The Board of Regents must allow the individual boards of trustees and their presidents sufficient autonomy and sufficient resources, to respond to the needs of these emerging constituencies. The Regents should continue to promote greater flexibility in the transfer of funds between accounts. At the same time, the Board should provide strong direction by continuing its enunciation of priorities for the system of public higher education.

6. Scarcity of both students and resources further strengthen the argument for collaborative efforts among institutions in both the public and independent sectors. Consortia have been well established in Massachusetts for many years. We need to build on our previous successes, offering incentives for those institutions willing to share physical and human resources.

Specific financial incentives should be incorporated into the budget process for campuses which have demonstrated a willingness to share resources with other institutions in both the public and independent sectors.

7. With respect to academic program elaboration and specialization, we recommend that colleges and universities mount a systematic effort to eliminate or consolidate courses; second, we recommend that they consider changes in "program arrays" which include either eliminating or consolidating marginal programs, particularly those that are peripheral to an institution's mission. The Regents should carefully monitor this effort and give it considerable weight in the approval of new programs.

8. The Regents have already begun the process of modifying the funding formula so that the budget recognizes other factors in addition to enrollment. This process should be continued, because we believe that it will relieve pressures to maintain or even expand enrollment at the expense of quality. We recommend that in the continuing process of redefining the budget formula, considerable weight be given to program quality and effectiveness.

9. Independent higher education will probably be affected more adversely than the public sector by any enrollment decline. We think it advisable that the Board of Regents reexamine its relationship with independent colleges and universities. This is a complex and delicate issue, and it is not susceptible to a simple recommendation. The Regents have already demonstrated their commitment to fruitful cooperation between the two sectors. More involvement will be required in the next decade, in the form of both technical and financial assistance. For their part, the independent institutions should be willing not only to share information and resources, but to be more accountable to the public in conducting and expanding academic programs.

CONCLUDING THOUGHTS

The decline in the eighteen year old population is finite. The downward slide ends in 1994 and thereafter begins to climb, though much more gradually in Massachusetts than nationally. Planning efforts, therefore, must look beyond the intermediate future and assure that higher education is able to meet the demands of the late nineties. This fact has special implications for the graduate education of future college faculty. Some experts predict a shortage in virtually every discipline twenty years hence. Sustaining scholarship and teaching in graduate level programs, especially the Liberal Arts is vital.

The population changes should force us to take a harder look at growth. We need to reexamine our historic infatuation with growth and ask whether for some institutions growing smaller in a planned, orderly way may be an attractive alternative. What industry calls the "downsizing" of America (the automobile is a case in point) has created a radically different industrial structure. There has been considerable pain in this transition, some of it unnecessary because it was unplanned. We can avoid much of that pain by charting and hence controlling our future. Growing smaller requires the reallocation of resources and their effective conservation. But a college is unlikely to embrace a smaller future if the financial penalties are severe. Moreover, redeploying resources is very difficult when resources and enrollments simultaneously decline. A key to our success in offering institutions the choice of growing smaller is the ability to achieve more flexibility in the linkage between enrollment levels and available funds.

Modest contraction could actually represent an opportunity for the Commonwealth to increase its support for higher education. In the last several years, funding for Massachusetts higher education has increased dramatically. By holding spending steady, even with enrollment contractions, Massachusetts could improve the quality of educational programs and strengthen its competitive position nationally. This period of consolidation could allow us to enter the age of renewed growth with one of the nation's stronger higher education systems.